

REMARKS

The Examiner has rejected claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Pub. No. 2001/0045175 to Ouchi et al. ("Ouchi") in view of JP 2000-191973 to Fukui 58("Fukui"). The Examiner has also rejected claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,063,834 to Kappel et al. ("Kappel") in view of Fukui. In addition, the Examiner has rejected claims 13, 16, and 18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,888,287 to Brown et al. ("Brown") in view of Fukui. The Examiner has also rejected claims 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Ouchi in view of Fukui, and further in view of U.S. Patent No. 6,871,941 to Horii et al. ("Horii"). In addition, the Examiner has rejected claims 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Kappel in view of Fukui, and further in view of Horii.

The Examiner has objected to Claim 14 as being dependent upon a rejected base claim. However, Examiner has indicated that Claim 14 would be allowable if rewritten in independent form.

Claims 1-12 stand previously withdrawn. Claims 1-20 are currently pending. The following remarks are considered by applicant to overcome each of the Examiner's outstanding rejections to current claims 13-20. An early Notice of Allowance is therefore requested.

I. SUMMARY OF RELEVANT LAW

The determination of obviousness rests on whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. In determining obviousness, four factors should be weighed: (1) the scope and content of the prior art, (2) the differences between the art and the claims at issue, (3) the level of ordinary skill in the art, and (4) whatever objective evidence may be present. Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor. The

Examiner carries the burden under 35 U.S.C. § 103 to establish a prima facie case of obviousness and must show that the references relied on teach or suggest all of the limitations of the claims.

II. REJECTION OF CLAIMS 13 AND 15-18 UNDER 35 U.S.C. §103(A) BASED ON OUCHI IN VIEW OF FUKUI

On page 2 of the current Office Action, the Examiner rejects claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over Ouchi in view Fukui. These rejections are respectfully traversed and believed overcome in view of the following discussion.

Claim 13 states:

“A water base ink for ink-jet recording comprising:

“a dispersible coloring agent;

“a propylene glycol ether; and

“a surfactant represented by the following general formula
(3):

“R¹-O-(CH₂CH₂O)_n-SO₃M (3)

“wherein n represents an integer of 2 to 4, R¹ represents an alkyl group having a number of carbon atoms of 12 to 15, and M represents Na or triethanolamine.” (emphasis added).

The Examiner admits that Ouchi fails to disclose a surfactant represented by the Formula (3) of the current application. As a result, the Examiner cites to Fukui for the disclosure of Formula (3). However, the teachings of Fukui are directed to an ink containing a non-dispersible coloring agent (i.e., a pigment), while Claim 13 contains a dispersible coloring agent. See Fukui, Abstract. Non-dispersible coloring agents behave very differently from dispersible coloring agents. Surfactants that work well with non-dispersible coloring agents do not necessarily work well with dispersible coloring agents.

In fact, Fukui specifically teaches that the disclosed compound of Formula 1 is included solely to disperse the pigment. This is made abundantly clear by the abstract, which states that the ink composition of Fukui comprises water, (A) a pigment, (B) a surfactant, (C) a pH adjustor, (D) a shear viscosity reducing agent, and (E) a moisturizer, where the surfactant of component (B) is a compound of Formula 1. As such, Fukui relates to an aqueous ink which uses a pigment. As is well known, pigments are insoluble in water. As such, the compound of Formula 1 (the only surfactant included in the ink of Fukui) must necessarily be included for the sole purpose of dispersing the pigment.

In this way, Fukui is no different from the previous reference used by the Examiner, namely JP 2001-081372 to Ikemoto et al. ("Ikemoto"). Applicants previously argued that the combination of Ikemoto with the other references cited failed to render the current claims obvious. Examiner appears to have agreed with Applicants' arguments, as Examiner has withdrawn all of the rejections relating to Ikemoto. Therefore, Applicants must respectfully assert that the combination of Fukui with the other references also fails to render the current claims obvious.

Contrasting Fukui, the surfactants disclosed in Ouchi are not included as dispersants as the ink of Ouchi contains a self-dispersing pigment. As stated in Ouchi, "[t]he pigment for use in the invention preferably include those pigments which can be well dispersed in the above-described vehicles...." Ouchi, P. 5, ¶ [0067]. Moreover, there is no suggestion in either Ouchi or Fukui that the compound of Formula 1 disclosed in Fukui is substitutable for the surfactants disclosed in Ouchi. As a result, one of ordinary skill in the art would find (1) no motivation to combine the teachings of Fukui with those of Ouchi and (2) no reasonable expectation of success of combining the teachings of Fukui with those of Ouchi.

The Examiner asserts that it is obvious to combine Ouchi and Fukui. However, Examiner's logic on this matter is flawed. Fukui clearly teaches dispersing a non-dispersible pigment by using a dispersant. Ouchi, on the other hand, teaches the use of a self-dispersing pigment. Once the pigment is self-dispersing, there is no need to use a dispersing agent.

Therefore, there is no reason to combine the dispersant of Fukui with the ink compositions of Ouchi.

Moreover, even if there were a motivation, which Applicants contend there is not, the combination of the references would still fail to teach all of the elements of Claim 13. In particular, Fukui fails to teach combining a self-dispersing pigment with a dispersant. Claim 13 clearly states that the ink has “a dispersible coloring agent” **and** “a surfactant represented by the following general formula (3)”. Fukui fails to teach or suggest such a combination. Therefore, the Examiner cannot show a motivation to combine “a dispersible coloring agent” with “a surfactant represented by the following general formula (3)”, or that there is a reasonable expectation of success of the combination of Fukui with Ouchi.

Ouchi teaches in paragraph [0067] (portion pointed out by the Examiner on page 2 of the current Office action) that “[t]he pigment for use in the invention preferably include those pigments which can be well dispersed in the above-described vehicles....” (emphasis added).

Fukui teaches an aqueous ink composition for ball-point pen containing water, a pigment, a surfactant, a pH adjustor, a shear viscosity reducing agent, and a moisturizer as essential components. Wherein the surfactant is a compound represented by the following general formula:



In the above formula, R is an 8-20C (un)saturated hydrocarbon, n is an integer of 3 to 30, and M is an alkali metal, ammonium, or alkylamine. The above ink composition is created for the purpose of providing an aqueous ink composition for ball-point pen which achieves satisfactory ink release from the pen, which causes no trouble such as husky or broken line on paper surface, and which is excellent in the aging characteristic regarding the lubrication, the cap-off property writing performance, and the storage performance. See Fukui, Abstract and Claim 1.

Fukui teaches in paragraph [0010] that “the surfactant used for the ink composition of this invention has function of adhering to particles of the pigment to thereby disperse¹ the pigment in water, as well as of improving the lubricating property of the ball, namely, of imparting the smooth writing feeling; therefore, there is no need to add any lubricating agent to the surfactant”. (emphasis added). See attached partial English translation of Fukui found in Appendix A.

Namely, it is apparent that the main function of the surfactant taught in Fukui is the dispersion of the pigment in water. Accordingly, similar to Ikemoto et al. (JP 2001-081372) cited in the previous Office Action, the surfactant of Fukui is used to disperse the pigment. Thus, there is no need to use the surfactant of Fukui together with a self-dispersible pigment.

Therefore, a person skilled in the art would not have been motivated to use the surfactant of Fukui together with Ouchi that teaches to use a self-dispersible pigment (“...those pigments which can be well dispersed in the above-described vehicles”; paragraph [0067]).

In addition, another function of the surfactant taught in Fukui is “of improving the lubricating property of the ball, namely of imparting the smooth writing feeling”, as discussed above. However, such function is not related to the ink-jet recording of the present application. Thus, the person skilled in the art would not have been motivated to combine the surfactant of Fukui with Ouchi for the purpose of producing a water-based ink for ink-jet recording.

Since the references cited by the Examiner (a) fail to teach or suggest a dispersible coloring agent and a surfactant represented by the following general formula (3), and (b) there is no motivation to combine the references and no reasonable expectation of success of the combination, Applicants respectfully assert that Examiner has failed to establish a prima facie case of obviousness of independent Claim 13, and corresponding claims 15-18 as they are

¹ Please note that in Machine-assisted English translation of Fukui attached to the outstanding Office action, the original Japanese term is translated by using the English verb “distribute”.

ultimately dependent from Claim 13. Therefore, Applicants respectfully request that Examiner remove the rejections of claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Pub. No. 2001/0045175 to Ouchi et al. in view of JP 2000-191973 to Fukui.

III. REJECTION OF CLAIMS 13 AND 15-18 UNDER 35 U.S.C. §103(A) BASED ON KAPPELE IN VIEW OF FUKUI

On page 3 of the current Office Action, the Examiner rejects claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over Kappele in view Fukui. These rejections are respectfully traversed and believed overcome in view of the following discussion.

Claim 13 states:

“A water base ink for ink-jet recording comprising:

“a dispersible coloring agent;

“a propylene glycol ether; and

“a surfactant represented by the following general formula
(3):

“R¹-O-(CH₂CH₂O)_n-SO₃M (3)

“wherein n represents an integer of 2 to 4, R¹ represents an alkyl group having a number of carbon atoms of 12 to 15, and M represents Na or triethanolamine.” (emphasis added).

The Examiner admits that Kappele fails to disclose a surfactant represented by the Formula (3) of the current application. As a result, the Examiner cites to Fukui for the disclosure of Formula (3). However, the teachings of Fukui are directed to an ink containing a non-dispersible coloring agent (i.e., a pigment), while Claim 13 contains a dispersible coloring agent. See Fukui, Abstract. Non-dispersible coloring agents behave very differently from dispersible

coloring agents. Surfactants that work well with non-dispersible coloring agents do not necessarily work well with dispersible coloring agents.

In fact, Fukui specifically teaches that the disclosed compound of Formula 1 is included solely to disperse the pigment. This is made abundantly clear by the abstract, which states that the ink composition of Fukui comprises water, (A) a pigment, (B) a surfactant, (C) a pH adjustor, (D) a shear viscosity reducing agent, and (E) a moisturizer, where the surfactant of component (B) is a compound of Formula 1. As such, Fukui relates to an aqueous ink which uses a pigment. As is well known, pigments are insoluble in water. As such, the surfactant of Formula 1 (the only surfactant included in the ink of Fukui) must necessarily be included for the sole purpose of dispersing the pigment.

In this way, Fukui is no different from the previous reference used by the Examiner, namely JP 2001-081372 to Ikemoto et al. ("Ikemoto"). Applicants previously argued that the combination of Ikemoto with the other references cited failed to render the current claims obvious. Examiner appears to have agreed with Applicants' arguments, as Examiner has withdrawn all of the rejections relating to Ikemoto. Therefore, Applicants must respectfully assert that the combination of Fukui with the other references also fails to render the current claims obvious.

Contrasting Fukui, the surfactants disclosed in Kappale at column 4, lines 33-50 (the portion to which Examiner cites) appear to be used as dispersants, as the ink of Kappale may contain a non-dispersible coloring agent, i.e., a pigment. See Kappale, Col. 6, Lns. 3-13. This is because a dispersant would only be needed if a non-dispersible coloring agent were used, since a dispersible coloring agent would require no dispersant. Moreover, there is no suggestion in either Kappale or Fukui that the compound of Formula 1 disclosed in Fukui is substitutable for the surfactants disclosed in Kappale. As a result, one of ordinary skill in the art would find (1) no motivation to combine the teachings of Fukui with those of Kappale and (2) no reasonable expectation of success of combining the teachings of Fukui with those of Kappale.

The Examiner asserts that it is obvious to combine Kappelé and Fukui. However, Examiner's logic on this matter is flawed. Fukui clearly teaches dispersing a non-dispersible pigment by using a dispersant. Even if Kappelé teaches the use of a self-dispersing coloring agent, which Applicants contend Kappelé does not, there is no motivation to combine a dispersant with a self-dispersing coloring agent. Once the coloring agent is self-dispersing, there is no need to use a dispersing agent. Therefore, there is no reason to combine the dispersant of Fukui with the ink compositions of Kappelé.

Moreover, even if there were a motivation, which Applicants contend there is not, the combination of the references would still fail to teach all of the elements of Claim 13. In particular, Fukui fails to teach combining a self-dispersing pigment with a dispersant. Claim 13 clearly states that the ink has "a dispersible coloring agent" **and** "a surfactant represented by the following general formula (3)". Fukui fails to teach or suggest such a combination. Therefore, the Examiner cannot show a motivation to combine "a dispersible coloring agent" with "a surfactant represented by the following general formula (3)", or that there is a reasonable expectation of success of the combination of Fukui with Kappelé.

Kappelé relates to a wet-rub resistant ink composition including a specific binder material. See Kappelé, Abstract. The Examiner asserts on page 3 of the current Office Action that Kappelé "discloses a water-based ink for ink jet recording including a dispersible coloring agent (column: 6, line: 3-67)...." However, Applicants respectfully assert that this portion of Kappelé does not explicitly describe any pigment (i.e., coloring agent) which is dispersible.

Even if Kappelé used any self-dispersible coloring agent (for example, self dispersible pigment) as asserted by the Examiner, there would have been no need to use the surfactant taught by Fukui, which has the function to disperse the pigment in water, together with any self-dispersible pigment.

Further, as discussed above regarding the rejection based on Fukui and Ouchi, another function of the surfactant taught in Fukui is "of improving the lubricating property of the ball, namely of imparting the smooth writing feeling". However, such function is not related to

the ink-jet recording of the present application. Thus, the person skilled in the art would not have been motivated to use the surfactant of Fukui together with Kappelé for the purpose of producing a water-based ink for ink-jet recording.

Since the references cited by the Examiner (a) fail to teach or suggest a dispersible coloring agent and a surfactant represented by the following general formula (3), and (b) there is no motivation to combine the references and no reasonable expectation of success of the combination, Applicants respectfully assert that Examiner has failed to establish a prima facie case of obviousness of independent Claim 13, and corresponding claims 15-18 as they are ultimately dependent from Claim 13. Therefore, Applicants respectfully request that Examiner remove the rejections of claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,063,834 to Kappelé et al. in view of JP 2000-191973 to Fukui.

IV. REJECTION OF CLAIMS 13, 16, AND 18 UNDER 35 U.S.C. §103(A) BASED ON BROWN IN VIEW OF FUKUI

On page 4 of the current Office Action, the Examiner rejects claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over Brown in view Fukui. These rejections are respectfully traversed and believed overcome in view of the following discussion.

Claim 13 states:

“A water base ink for ink-jet recording comprising:

“a dispersible coloring agent;

“a propylene glycol ether; and

“a surfactant represented by the following general formula
(3):

“ $R^1-O-(CH_2CH_2O)_n-SO_3M$ (3)

“wherein n represents an integer of 2 to 4, R^1 represents an alkyl group having a number of carbon atoms of 12 to 15,

and M represents Na or triethanolamine.” (emphasis added).

The Examiner admits that Brown fails to disclose a surfactant represented by the Formula (3) of the current application. As a result, the Examiner cites to Fukui for the disclosure of Formula (3). However, the teachings of Fukui are directed to an ink containing a non-dispersible coloring agent (i.e., a pigment), while Claim 13 contains a dispersible coloring agent. See Fukui, Abstract. Non-dispersible coloring agents behave very differently from dispersible coloring agents. Surfactants that work well with non-dispersible coloring agents do not necessarily work well with dispersible coloring agents.

In fact, Fukui specifically teaches that the disclosed compound of Formula 1 is included solely to disperse the pigment. This is made abundantly clear by the abstract, which states that the ink composition of Fukui comprises water, (A) a pigment, (B) a surfactant, (C) a pH adjustor, (D) a shear viscosity reducing agent, and (E) a moisturizer, where the surfactant of component (B) is a compound of Formula 1. As such, Fukui relates to an aqueous ink which uses a pigment. As is well known, pigments are insoluble in water. As such, the surfactant of Formula 1 (the only surfactant included in the ink of Fukui) must necessarily be included for the sole purpose of dispersing the pigment.

In this way, Fukui is no different from the previous reference used by the Examiner, namely JP 2001-081372 to Ikemoto et al. (“Ikemoto”). Applicants previously argued that the combination of Ikemoto with the other references cited failed to render the current claims obvious. Examiner appears to have agreed with Applicants’ arguments, as Examiner has withdrawn all of the rejections relating to Ikemoto. Therefore, Applicants must respectfully assert that the combination of Fukui with the other references also fails to render the current claims obvious.

Contrasting Fukui, the surfactants disclosed in Brown are added to achieve the desired reduction of smear. Brown, Col. 2, Lns. 20-21. While Brown does disclose the use of a dispersant, such a dispersant would only be needed if a non-dispersible coloring agent was used.

See Brown, Col. 2, Lns. 46-47 (“Dispersing agents may be used to help suspend the pigment particles in the ink composition.”). There is no suggestion in either Brown or Fukui that the compound of Formula 1 disclosed in Fukui is substitutable for the surfactants disclosed in Brown. As a result, one of ordinary skill in the art would find (1) no motivation to combine the teachings of Fukui with those of Brown and (2) no reasonable expectation of success of combining the teachings of Fukui with those of Brown.

The Examiner asserts that it is obvious to combine Brown and Fukui. However, Examiner’s logic on this matter is flawed. Fukui clearly teaches dispersing a non-dispersible pigment by using a dispersant. Even if Brown does teach the use of a self-dispersing coloring agent, which Applicants contend Brown does not, there is no motivation to combine a dispersant with a self-dispersing coloring agent. Once the coloring agent is self-dispersing, there is no need to use a dispersing agent. Therefore, there is no reason to combine the dispersant of Fukui with the ink compositions of Brown.

Moreover, even if there were a motivation, which Applicants contend there is not, the combination of the references would still fail to teach all of the elements of Claim 13. In particular, Fukui fails to teach combining a self-dispersing pigment with a dispersant. Claim 13 clearly states that the ink has “a dispersible coloring agent” **and** “a surfactant represented by the following general formula (3)”. Fukui fails to teach or suggest such a combination. Therefore, the Examiner cannot show a motivation to combine “a dispersible coloring agent” with “a surfactant represented by the following general formula (3)”, or that there is a reasonable expectation of success of the combination of Fukui with Brown.

Brown relates to an ink jet composition which exhibits a reduced tendency to smear upon application to a substrate, and includes a propylene glycol ether and/or a propylene glycol ether acetate, a surfactant, and a colorant. See Brown, Abstract. The Examiner asserts on 4 5 of the current Office action that Brown “discloses a water-based ink for ink jet recording including a dispersible coloring agent (column: 2, line: 39-60). . . .” However, Applicants

respectfully assert that this portion of Brown does not explicitly describe any pigment (i.e., coloring agent) which is dispersible.

Even if Brown used any self-dispersible coloring agent (for example, self-dispersible pigment) as asserted by the Examiner, there would have been no need to use the surfactant taught by Fukui, which has the function to disperse the pigment in water, together with any self-dispersible pigment.

Further, as discussed above regarding the rejection based on Fukui and Ouchi, another function of the surfactant taught in Fukui is “of improving the lubricating property of the ball, namely of imparting the smooth writing feeling”. However, such function is not related to the ink-jet recording of the present application. Thus, the person skilled in the art would not have been motivated to use the surfactant of Fukui with Brown for the purpose of producing a water-based ink for ink-jet recording.

Since the references cited by the Examiner (a) fail to teach or suggest a dispersible coloring agent and a surfactant represented by the following general formula (3), and (b) there is no motivation to combine the references and no reasonable expectation of success of the combination, Applicants respectfully assert that Examiner has failed to establish a prima facie case of obviousness of independent Claim 13, and corresponding claims 16 and 18 as they are ultimately dependent from Claim 13. Therefore, Applicants respectfully request that Examiner remove the rejections of claims 13, 16, and 18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,888,287 to Brown et al. in view of JP 2000-191973 to Fukui.

V. REJECTION OF CLAIMS 19 AND 20 UNDER 35 U.S.C. §103(A)

On page 5 of the current Office Action, the Examiner rejects claims 19 and 20 under 35 U.S.C. § 103(a) as being unpatentable over various references. These rejections are respectfully traversed and believed overcome in view of the following discussion.

Claims 19 and 20 are each ultimately dependent from Claim 13. As Claim 13 is allowable, so must be claims 19 and 20. Therefore, Applicants respectfully request the Examiner remove the rejections of Claims 19 and 20 under 35 U.S.C. § 103(a).

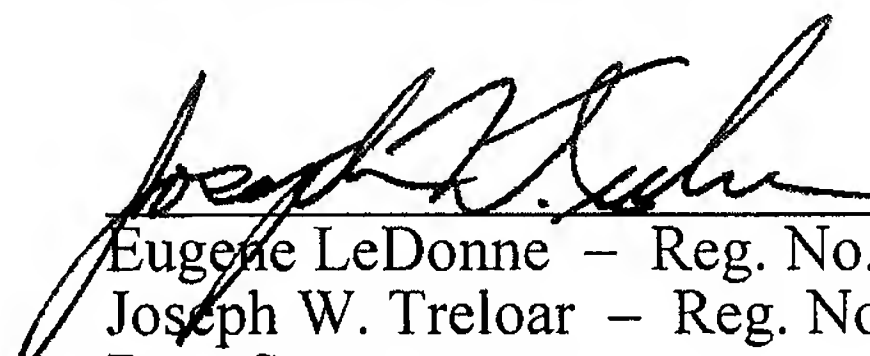
VI. OBJECTION TO CLAIM 14 AS BEING DEPENDENT UPON A REJECTED BASE CLAIM

On page 6 of the current Office Action, the Examiner objects to Claim 14 as being dependent upon a rejected base claim. This objection is respectfully traversed and believed overcome in view of the following discussion.

Claim 14 is dependent upon independent Claim 13. As Claim 13 is allowable, so must be Claim 14. Therefore, Applicants respectfully request the Examiner remove the objection to Claim 14 as being dependent upon a rejected base claim.

Based upon the above remarks, Applicant respectfully requests reconsideration of this application and its early allowance. Should the Examiner feel that a telephone conference with Applicant's attorney would expedite the prosecution of this application, the Examiner is urged to contact him at the number indicated below.

Respectfully submitted,


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Appendix A

English translation of paragraph [0010]:

[0010] The surfactant used for the ink composition of this invention has function of adhering to particles of the pigment to thereby disperse the pigment in water as well as of improving the lubricating property of the ball, namely, of imparting the smooth writing feeling. Therefore, there is no need to add any lubricating agent separately.

A surfactant represented by general formula "Formula 1" is excellent both in the pigment dispersability and the lubricating property.



In the formula, when R is less than 8 or exceeds 20, the object of the invention cannot be achieved. The examples of the surfactant includes: sodium polyoxyethylene lauryl ether sulfate (trade name: EMAL 20C, E-27C, E-70C; manufactured by KAO CORPORATION), sodium polyoxyethylene alkyl ether sulfate (trade name: EMAL 20 CM, LEVENOL WX, LATEMUL WX; manufactured by KAO CORPORATION), polyoxyethylene oleyl ether sulfate ester ammonium salt (trade name: HITENOL 08E, 18E; manufactured by DAI-ICHI KOGYO SEIYAKU Co., Ltd.), polyoxyethylene lauryl ether sodium sulfate (trade name: NIKKO L SBL-2N-27, 3N-27, 4N; manufactured by NIKKO CHEMICALS Co., Ltd.), polyoxyethylene lauryl ether sulfuric acid triethanolamine (trade name: SBL-2T-36, 4T; manufactured by NIKKO CHEMICALS Co., Ltd.), and the like. When a cationic surfactant is used, the storage performance of the ink is lost. Further, the lubricating property or the pigment dispersability is lacking in anionic surfactant such as polyoxyethylene-alkyl-ether phosphoric ester, etc., and in nonionic surfactant.